A COMPARISON OF THE EFFECTS OF PHOTOGRAPHY AND DRAWING ON THE EXPRESSIVE CONTENT OF PAINTINGS

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MARTHA JEAN LYNCH
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ABSTRACT

A COMPARISON OF THE EFFECTS OF
PHOTOGRAPHY AND DRAWING ON
THE EXPRESSIVE CONTENT
OF PAINTINGS

By

Martha Jean Lynch

This pilot study was an attempt to contribute to the research necessary to begin to answer the questions relating to newer media and art education. The specific questions the study attempted to answer were:

1. Does the use of a camera provide greater perceptual awareness, in terms of expressive content in painting, than drawing does?
2. Will children who use a camera be more involved in the process of gaining new visual information than those who draw?
3. Will children who use a camera to collect visual information for expressive content in painting be more satisfied with their paintings than children who collect their visual information through drawing?

The main premise of the study was that the paintings of trees by fifth graders who have photographed trees in different ways will be qualitatively better, in terms of expressive content, than the paintings of trees by fifth graders who have done drawings of trees. The second premise was that children who have used cameras to photograph trees will be more involved in the process and more satisfied with their final painting of trees than the children who have done drawings of trees.

Two groups of fifth graders participated in the study. Both groups did two tempera paintings of trees one at the beginning of the study and one at the end. One group used a camera to photograph different perceptual viewpoints, new utilization of spatial elements, and new relationships or treatments, dealing with trees as subject matter. The other group also explored different perceptual viewpoints, utilization of spatial elements, and relationships or treatments, but did so by drawing.

The art work of both groups was judged on three criteria for expressive content. The groups were compared on improvement in expressive content from the first painting to the final painting. Student involvement in each process and the students' satisfaction with their final paintings was evaluated by means of two questionnaires.

The findings of the study showed that the fifth graders who did drawings of trees, painted pictures that were qualitatively better, in terms of expressive content,

than fifth graders who photographed trees. In this study drawing was a better means of perceptual training for expressive content in painting than photography.

Further, the group who used cameras was more involved with the process at the beginning, but the involvement was with the camera itself rather than using the camera to collect new visual information. The drawing group and not the camera group was more satisfied with their final paintings.

The camera does have a potential for developing perceptual awareness for expressive content in paintings, as evidenced by the study. However, if the full potential of the camera is to be used in this type of situation, more direct application of photography to painting is necessary. Drawings, in this pilot study provided a more direct means of developing expressive content for painting.

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By

Martha Jean Lynch

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CHAPTER I

INTRODUCTION

Electronic media are an integral part of American adult life. American society depends on the telephone, radio, television and the movies for work, information and entertainment. Outside of the school, media occupy a large portion of a child's time. Educators in many fields are beginning to turn their attention to the importance of the electronic media and its relation to education.

A review of current literature on the relationship of electronic media and education shows three major trends. One is that different media are used as tools for creative expression. Still cameras, movie cameras, and television cameras are being used for creative expression in photography and film making courses at universities, secondary and elementary schools. The art educator Vincent Lanier states:

> A . . . thoroughly wholesome concept in the use of media suggests that media themselves are studio devices with an expressive potential in the visual arts for pupils in our classrooms to use. With movie and still cameras and films as inexpensive and easy to

> use as they are now, the art teacher has still another art medium with which the child even at a very early age, can create visual statements.[1]

Another trend is that of media study; studying the content, form and effects of mass media such as magazines, radio, films and television. Neil Postman and Charles Weingartner have made suggestions for media study in their books Teaching as a Subversive Activity and The Soft Revolution. Art educator June K. McFee lists, " . . . helping students discriminate and evaluate the symbolic communication of mass media to preserve independent judgment,"[2] as one of the aesthetically based behaviors that she believes should be considered in all art education.

Thirdly, suggestions have been made for using media as tools for different types of learning. This would include teaching machines, instructional films and filmstrips and using a medium such as the camera as a tool for developing perceptual awareness. In a pilot project for visual literacy and the teaching of English as a second language, Patricia Hefferman-Cabrera proposes using the camera to bring out self-perception, environmental awareness, and the ability to interact with and relate to the world. One of the specific objectives of this program is:

> . . . to show that learner-centered curriculum created by the child with the camera, which allows the child to 'invent' himself and conceptualize about the world he lives in, is a

> more effective teaching tool than teacher generated cognitively devised material. . . . The camera can become the incentive tool which allows the child to conceptualize his ideas and thus share the excitement of discovery, interaction, and exploration of the self which are part of the learning process.[3]

Here the camera is used as a tool for learning with the assumption that the camera brings about new awareness. Murray Suid, author of a children's book on photography says similar things about using a camera:

> The photographic image, by isolating an instant of time and a scene causes us to concentrate our attention. Seeing with concentration with a fresh eye is a necessary first step in dealing creatively with many other activities. The excitement of fresh and concentrated perception generated by the use of the camera carries over into seeing without the camera.[4]

All of these areas are new to education and art education in particular. Many educators have realized the need for further study in all areas related to media use in the schools. The final report of a study issued in February, 1969--<u>An Experimental Study of the Degree of Affective Response Elicited by Several Mediated and Non-Mediated Instructional Methods</u>--listed some of the unsolved problems in the summary:

> Three important problems in the field of instructional technology remain unsolved: 1) What is the contribution of media to the educational process? 2) What instructional objectives are media best suited to meet? 3) What are the different effects of different media?[5]

Art educators also have made recommendations for further study in regard to media use in art education.

In August of 1966, fifty art educators and four Media Specialists participated in a five day symposium--The Uses of Newer Media in Art Education Project. The Research Committee listed as problems for consideration: The influence of media on the learner, the functions of the presence or absence of a teacher in the presentation of instructional media, and does evidence of learning exist as a result of producing media.[6] This committee also made the following statement:

> One problem area which appears to lend itself to research in art education and media is concerned with the nature of instruments and their effective uses in visual aesthetic education.[7]

This pilot study is an attempt to contribute to the research necessary to begin to answer the questions relating to newer media and art education. How does the use of media by children affect their perceptual learning? More specifically, does the use of a camera contribute more to perceptual awareness in terms of expressive content in painting than does drawing?

Background of the Study

The study is based on certain assumptions supported by the literature in art and education which are presented here to provide a rationale for the premise of this study.

One basic assumption underlying the study is that the trend to use and discuss different media in the schools is an important direction in education. Because many of the newer media are visual media and because they hold

potential for creative expression in the arts, this trend has become an important one to art educators. This is evidenced in Jerome Hausman's "Report of the Higher Education Group" from the 1966 symposium:

> There was concensus that we are only at the threshold of new and exciting developments in the utilization of technology to enhance the teaching of art. We would hope that efforts can be undertaken by the National Art Education Association in co-operation with other appropriate agencies in organizing, evaluating, and disseminating information about new films, video tapes and other programs.[8]

Another assumption made here is that perceptual awareness can be increased through perceptual training. June K. McFee lists three major implications from experiments dealing with perception:

> (1) Children handle differently the visual information they receive in the classroom, (2) since these differences appear to be in large part learned, more adequate means of handling visual information can be taught, and (3) teachers can prepare children for more complex visual tasks by helping them to understand the nature of new things in terms of what they already know.[9]

Based on McFee's theories, Salome developed a study to determine if perceptual training presented in conjunction with drawing instruction would increase the visual information content of elementary school children's drawings significantly more than participation in drawing activities without direct perceptual training.

> This study indicated that perceptual training relevant to representational drawing can increase the amount of visual information fifth grade children include in their drawings of visual stimuli.[10]

In order to increase their perceptual awareness children must be aware of color, size, and shape constancies. The camera provides a means to do this. Arnheim describes this phenomenon in terms of film images, although the same things occur with still photographs:

> The retinal image of a table top is like the photograph of it; the front edge, being nearer to the spectator, appears much wider than the back; the rectangular surface becomes a trapezoid in the image. As far as the average person is concerned, however, this again does not hold good in practice: he sees the surface as rectangular and draws it that way. Thus the perspective changes taking place in any object that extends in depth are not observed but are compensated unconsciously. That is what is meant by constancy of form. In a film picture it is hardly operative at all--a table top, especially if it is near the camera, looks very wide in front and very narrow at the back.[11]

The premise of the study is based on the assumption that the use of a camera and resulting photographs can provide a new way of seeing things by breaking down constancy factors. Gyorgy Kepes in Language of Vison talks about the way of seeing that the camera has revealed:

> Vision unchained by photographic cameras was able to explore hitherto untouched territories of perspective. Latent optical aspects became apparent because the camera was able to reproduce objects from an angle of vision that the unaided eye could not achieve in reasonable comfort, if at all. Not only the accustomed frontal and profile views but also the view from above, the bird's-eye view, and that from below, the frog's-eye view were recorded. The vanishing point which, in the traditional space representation, had usually been in the middle of the picture-plane was shifted left, right, up and down, into almost all possible positions. . . . Motion picture photography still further increased the elasticity of foreshortening and introduced a hitherto unseen flexibility in the use of size

> differences for space accentuation. The 'close-up' broke up the traditional continuous space unity inherited through painting and theatre and extended the picture space to amplified dimension.[12]

The camera also provides a means for recording images not ordinarily seen with the human eye, through the use of multiple exposure and superimposition. These methods can produce images of motion and unusual relationships.

> Much information that occurs within our visual frame of reference cannot be studied because of the rapid motion involved. The camera is able to stop any action at any point, so that patterns and visual cues become available for observation.[13]

The work of certain artists has been directly influenced by these kinds of photographic images:

> . . . Marcel Duchamp, the creator of the infamous 'Nude Decending a Staircase' (1912) and the Futurist artists Balla and Boccioni particularly, found in photographs by Marey and his followers some of the visual means for their representations of the dynamism of modern life.[14]

Another assumption that this study is based on is that the camera itself will be a motivating factor in perceptual learning. The use of the camera will require interaction between the students and between the students and their environment which will be a motivation to learning. Because of the interaction involved and interest generated by the use of cameras, photography has been successfully used in teaching reading to fifth grade students. The conclusions of this study were:

> Significantly greater gains in sight and word recognition were achieved in the study by educationally disadvantaged children through the use of photography and student made materials than through the use of methods involving 'conventional techniques.' This method created interest, introduced problems, stimulated thinking, clarified and amplified concepts, provoked discussion and proved a vehicle for more positive self-concepts.[15]

Statement of the Problem

The main purpose of the pilot study was to contribute to the research concerning art education and media. In general terms, the study was centered around the question of how the use of media affects the perceptual learning of children. The specific questions the study attempted to answer were:

1. Does the use of a camera provide greater perceptual awareness, in terms of expressive content in painting, than drawing does?
2. Will children who use a camera be more involved in the process of gaining new visual information than those who draw?
3. Will children who use a camera to collect visual information for expressive content in painting be more satisfied with their paintings than children who collect their visual information through drawing?

The assumptions that provided a background for the study were:

1. The trend to use and discuss different media in the schools is an important trend in education.
2. Perceptual awareness can be increased through perceptual training.
3. The camera can provide a means for perceptual learning.
4. The camera itself can be a motivating factor in perceptual learning.

Based on these assumptions the main premise of the study was: the paintings of trees by fifth graders who have photographed trees in different ways will be qualitatively better, in terms of expressive content, than the paintings of trees by fifth graders who have done drawings of trees. Secondly: the children who have used cameras to photograph trees will be more involved in the process and more satisfied with their final painting of trees than the children who have done drawings of trees.

Limitations of the Study

This study was limited to expert judgements of the differences in perceptual awareness gained from using a camera and perceptual awareness gained from drawing only

in terms of how much this perceptual awareness affected the expressive content of painting. The expressive content was judged in terms of perceptual viewpoint, relationships and treatment of subject matter, and use of spatial elements. Student interest and satisfaction was also evaluated. Evaluation was limited to student interest in the process and satisfaction with the final product as evidenced in a questionnaire.

The subjects in the study were fifth grade children from two different schools. Differences in expressive content and student satisfaction were measured only at the fifth grade level.

Definition of Terms

The following terms are defined here to facilitate the interpretation of this paper.

Expressive content is defined in this study as the enhancement of subject matter relative to new or unusual perceptual viewpoint, new or unusual relationships or treatment of elements, and new or unusual utilization of spatial elements.

Media unless otherwise specified is a general term used to refer to all forms of electronic media, including electronically derived mass media. It includes both the tools and their products. In other words cameras are media for creative expression and the products of cameras--photographs, films can also be media if they are

used as a means to an end, for example photographs used in advertising as a means to get people to buy.

Perceptual awareness as defined here is the ability to see visual qualities and relationships. For example, perceptual awareness in terms of a tree would be the ability to see visual qualities such as textural differences, color changes, and varieties in shape.

Perceptual training is used here to mean any instruction designed to increase a child's visual information.

Visual information is a term used to refer to the stimuli received by the eye when looking at an object.

CHAPTER II

PROCEDURES OF THE STUDY

This chapter provides a description of the study. A description of the population, the different sessions, and evaluation procedures.

Population

The population of this study was comprised of children in the fifth grade from two different schools. The children involved were selected on a volunteer basis. Fifteen fifth grade children at each of the two schools signed up for an extra art class. At one school, sessions were held after school and at the other the sessions were held both during home-room period and after school. Since the selection of participants was on a volunteer basis, the two groups were different in numbers of children of each sex. Nine girls and six boys made up Group I, the drawing group. Group II, the photography group, had as participants six girls and nine boys.

The two schools were chosen because of the interest and enthusiasm of the students, teachers and administrators. The fifteen children in Group I attended a parochial

elementary school. The fifteen children in Group II attended an elementary school in a married student housing complex, so that all members of Group II had at least one parent who was a university student.

There was a considerable difference between the two groups in terms of attendance. In Group I only four children attended every session. Two children missed one session, five children missed one half of the sessions, three came only once and one child never attended. Attendance was much more regular in Group II, with seven children attending every session. Six of the fifteen missed one session, and two of the children missed one half of the sessions. The children whose work was judged in the study were those children who completed a first painting and a final painting and did not miss more than one session. This included four children from Group I and twelve children from Group II.

Description of the Sessions

The sessions of the study were designed to provide the subjects with new visual information for expressive content in painting. The subjects were encouraged to try new perceptual viewpoints, new uses of spatial elements and new relationships and treatments; one group through drawing, and another group through photography. Both groups used trees as subject matter. At the first session and the final session children in both groups did paintings of

trees. These paintings were then used to determine the differences between the perceptual training with a camera and the perceptual training through drawing. The paintings were judged on the expressive content in terms of perceptual viewpoint, use of spatial elements, and relationships or treatment of subject matter.

The study was originally set up to include five sessions for each group of approximately one hour and fifteen minutes. This would have been a total of six hours and fifteen minutes. Because of date changes, last minute rehearsals, and other subject commitments that were beyond the control of the researcher, Group I met a total of four hours and thirty minutes and Group II met a total of four hours and fifteen minutes.

At the first session both Group I and Group II were asked to make a painting using a tree or trees as the subject matter. Children in both groups were given six-color tempera sets, 12" x 14" white paper, watercolor brushes and pans for mixing and water. After receiving the materials they were asked to apint a picture of a tree or trees in any way they wanted. They were told that the trees could be trees they had seen somewhere, an imaginary tree, a tree they had climbed, an interesting part of a tree, trees in a storm or anything else they could think of. The only other instructions given were on color mixing.

The second session for Group I involved drawing trees from different viewpoints. Children were given black

drawing pencils, white drawing paper and erasers. Instructions concerning different uses of the pencil were given first. The group was then asked to draw a tree or trees from a viewpoint different than shown in their paintings. When asked for ideas the children volunteered suggestions such as a giant's view, an animal's view from inside the tree, just a piece of bark, looking up at it. They did their tree drawings outside and were encouraged to try and observe the tree from the viewpoint they wanted to draw. For example, one girl looked down on a small bush to understand what a tree would look like if viewed from above. Most of the children found this exercise difficult.

New relationships or treatments and use of spatial elements were discussed at the third session held for Group I. Using the same materials children were asked to draw trees again, this time changing them in anyway they wanted. They were encouraged to take an ordinary tree and draw it in a new way by adding new details, putting it in an unusual place, exaggerating parts, or combining it with other subject matter. The children were also asked to think about the space in their pictures. They were encouraged to use the space to relate parts of the picture and to think about the shapes of their spaces as well as the shapes of the trees. The children were generally more excited with these drawings than the previous ones.

Group II also explored different viewpoints at their second session, but by means of the camera. They were first given instructions on loading the film, focusing and how to obtain or prevent multiple exposures. They were then asked to take pictures of trees from different viewpoints. They volunteered suggestions of angle shots, looking up from underneath, climbing up in the tree. Each child had a camera and was allowed to take eight pictures. The pictures were taken outside using the trees around the playground.

The third session for Group II involved photographing trees in new or unusual relationships or with new treatment. Children were asked to photograph trees in new or unusual ways by putting the tree in an unusual setting, combining it with other subject matter, or concentrating on unusual details. For this exercise they again had eight shots. Many of the children used multiple exposures and some took pictures of people in different relationships to the trees.

At the fourth session the children in Group II were able to see the photographs taken in the second and third sessions. At this session use of spatial elements was discussed. The children were then asked to take pictures of trees concentrating on the use of space. They were encouraged to use the space in the picture to relate parts and emphasize things, to think about the shapes of spaces as well as the shapes of the trees.

The final session was the same for both Group I and Group II. As in the first session six-color tempera sets, 12" x 14" white paper, watercolor brushes and pans for mixing and water were used. Both groups were asked to do a painting of a tree or trees, this time using ideas from their drawings or photographs.

Both groups were given a student evaluation questionnaire at the end of the third session and at the end of the final session.

Evaluation Procedures

Differences in perceptual learning between Groups I and II were determined by comparing the expressive content in their paintings. Differences between Groups I and II in student involvement in the process and satisfaction with the final product were determined by comparing answers and comments on two different questionnaires.

Development of the Criteria

The work done by both Group I and Group II was judged on its expressive content. Expressive content here, is defined as the enhancement of subject matter content relative to new or unusual perceptual viewpoints, new or unusual use of spatial elements, and new or unusual relationships or treatment of elements.

In developing criteria for evaluation of fifth grade art work, consideration was given to general trends

in art expression at this grade level. Speaking of some general characteristics of art expression common to most nine to twelve year olds Lowenfeld and Brittain state:

> . . . the child moves to a form of expression more closely related to nature. But the child is still far from visual representation. . . . Now that the child is developing greater visual awareness, he no longer uses exaggerations, omissions, or other deviations in expressing his emotions. . . . The child begins to substitute other means of expression to show emphasis, such as accumulation of details on those parts that are emotionally significant to him.[16]

Drawings and paintings of trees were gathered from preliminary groups of fifth graders at each school involved in the study. This was done to further aid in the determination of typical, somewhat unusual, and new or unusual use of expressive qualities for this age level.

The three criteria for expressive content--perceptual viewpoint, use of spatial elements, and relationships or treatment of elements--have three values. The lowest score of 1 was given for typical use, 2 for somewhat unusual use and 3 for new or unusual use. Nitschke and Burkhart's Analytical Visual-Verbal Judgment Scales[17] and Lewis and Mussen's revised version of the Rouse Scale[18] provided some direction in the development of evaluative criteria for the study.

Verbal and Visual Descriptions of the Criteria

The following are the verbal definitions and visual examples of the different values for each criterion:

A new or unusual viewpoint means that the child has expressed a different way of looking at the subject matter in terms of point of view (looking down from above, looking up from below), angle or distance. A typical perceptual viewpoint of a tree for this age level is a front view of a tree, with the trunk resting on the bottom of the page or baseline and the branches or leafy part in the upper part of the picture.

With these definitions as a basis the following catagories and examples were used in judging the perceptual viewpoint of the paintings, drawings, and photographs:

1. TYPICAL PERCEPTUAL VIEWPOINT. Subject matter is shown from a frontal, upright position, and no attempt is made to show trees from a new or unusual point of view. For example, the tree trunk rests on the bottom of the page or baseline and the branches or leafy part are in the upper part of the picture.

2. SOMEWHAT UNUSUAL PERCEPTUAL VIEWPOINT. Subject matter is shown from a somewhat more unusual perceptual viewpoint than the typical perceptual viewpoint. Trees are still shown from a frontal position but viewpoint is changed in terms of

distance. For example, trees are shown from a distance on a hill or tree is shown in a close-up view of trunk.

3. NEW OR UNUSUAL PERCEPTUAL VIEWPOINT. Subject matter is shown from a new or unusual perceptual viewpoint in terms of position or angle. For example, perspective is used to show trees as if looking down from above or looking up from below. A new or unusual perceptual viewpoint would include a "giant's eye view," an "ant's eye view," etc.

New or unusual use of spatial elements is defined in terms of the meaningful use of space within objects, between and around objects. The space in the picture has been used in a meangful way--the negative space is as important as positive space. A typical, stereotyped use of space would be where there is little relationship between shapes with many meaningless spaces between and within shapes.

With these definitions as a basis the following catagories and examples were used in judging the use of spatial elements in the drawings, photographs and paintings:

FIGURE 1

Visual Examples of Typical Perceptual Viewpoint

FIGURE 2

Visual Examples of Somewhat Unusual Perceptual Viewpoint

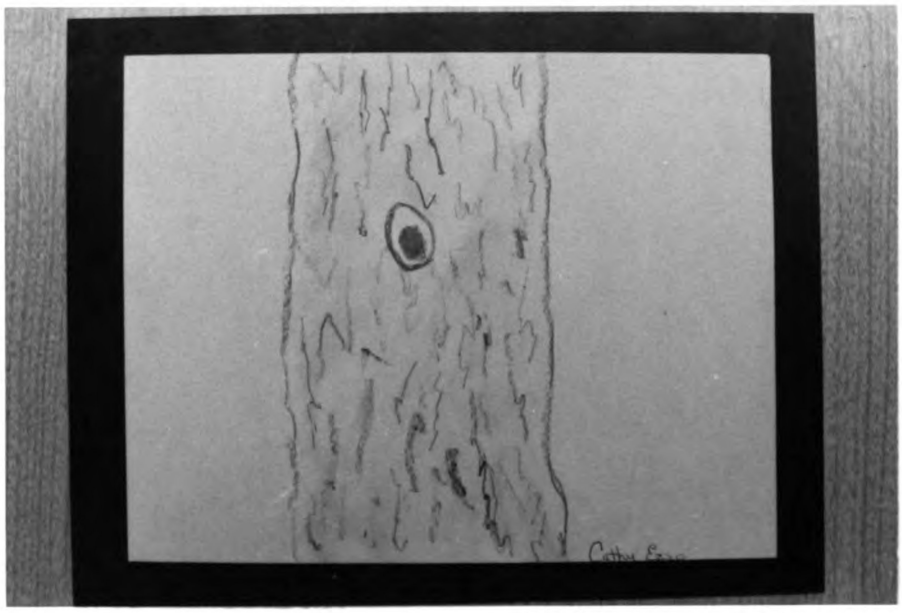
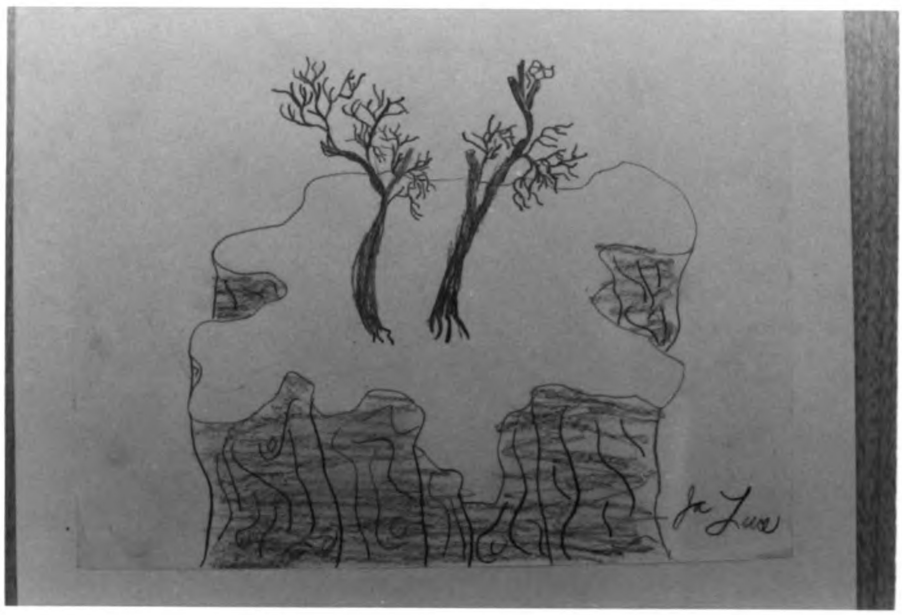


FIGURE 3

Visual Examples of New or Unusual Perceptual Viewpoint



1. TYPICAL USE OF SPATIAL ELEMENTS. There is little relationship between the shapes and meaningless spaces within and around them. For example, a tree placed on the page with meaningless space on either side of the tree. Not much attempt has been made to relate parts of the picture using spatial elements.

2. SOMEWHAT UNUSUAL USE OF SPATIAL ELEMENTS. Some attempt has been made to use spatial elements meaningfully, although some meaningless spaces still exist. For example, spaces in the top part of the picture may be highly interrelated but the bottom part of the picture has meaningless spaces. Spatial elements are not as highly interrelated or as meaningfully used as in (3) New or Unusual Use of Spatial Elements.

3. NEW OR UNUSUAL USE OF SPATIAL ELEMENTS. The shapes of the spaces are used in a meaningful way, the space within and around objects becomes as important as the objects themselves. For example, shapes of spaces between the branches are as interesting as the shapes of the trees and the spaces are used to relate parts of the picture.

Another example would be space used in a meaningful way to emphasize areas of the picture.

New or unusual relationships or treatment of elements is defined in terms of new or unusual subject matter or detail added to enhance the specified subject matter of trees. This includes relationships of subject matter and exaggeration of parts or detail, it does not include perceptual viewpoint. A typical or stereotyped treatment of elements would be when the tree is shown either by itself or with a few details, for example, grass or flowers. This does not include exclusion of detail for dramatic emphasis.

With these definitions as a basis the following catagories and examples were used in judging the relationships and treatment of elements in the paintings, drawings, and photographs:

1. TYPICAL RELATIONSHIPS OR TREATMENT OF ELEMENTS. Not much attempt has been made to enhance subject matter. The only enhancement may be in the use of details such as leaves, grass, or flowers.

2. SOMEWHAT UNUSUAL RELATIONSHIPS OR TREATMENT OF ELEMENTS. Some attempt has been made to

FIGURE 4

Visual Examples of Typical Use of Spatial Elements

FIGURE 5

Visual Examples of Somewhat Unusual
Use of Spatial Elements

FIGURE 6

Visual Examples of New or Unusual
Use of Spatial Elements

enhance the subject matter in terms of relationships or treatment. Some details have been used, for example, a moon and darkened sky or a tree bending in the rain. Another example here would be the addition of other subject matter--houses, people, etc. Details and additions are not as well used or as unusual as in (3) New or Unusual Relationships or Treatment of Elements.

3. NEW OR UNUSUAL RELATIONSHIPS OR TREATMENT OF ELEMENTS. Subject matter is treated in a new or unusual way in terms of relationships or detail. For example, trees are placed in a very unusual setting (trees walking a tightrope, tree in a giant's hand) or trees are combined with other subject matter to form new subject matter (tree monster, tree people). Another example is when new or unusual kinds or amounts of detail are used to enhance subject matter. For example, detailed treatment of all parts of the picture--bark, leaves, grass, sky, etc.

FIGURE 7

Visual Examples of Typical Relationships or Treatment of Elements

FIGURE 8

Visual Examples of Somewhat Unusual Relationships or Treatment of Elements

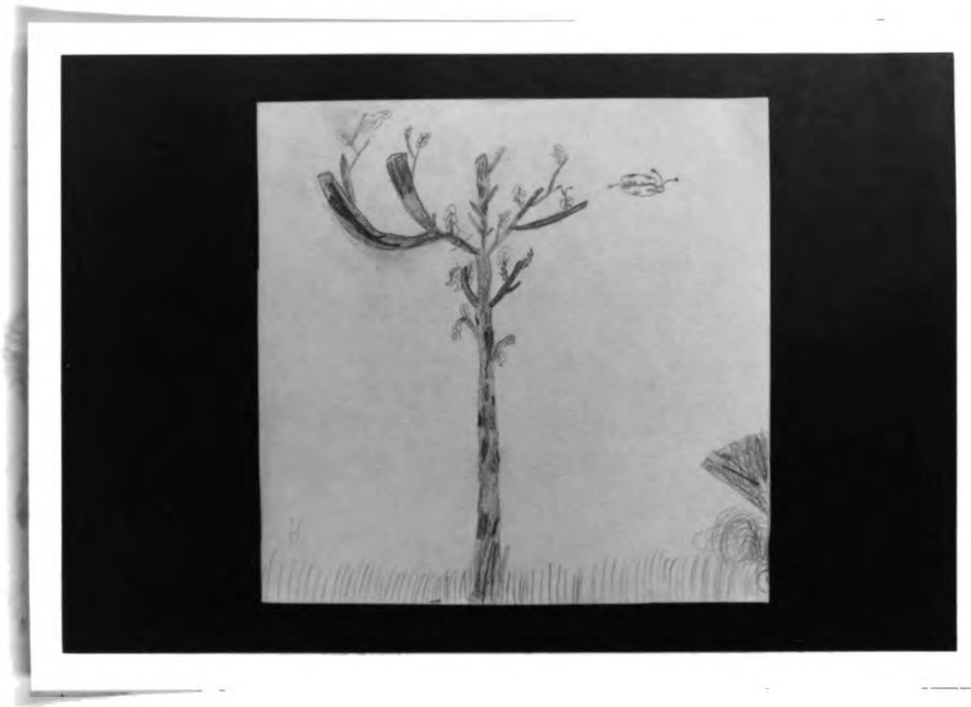


FIGURE 9

Visual Examples of New or Unusual Relationships or Treatment of Elements

Judging Procedure

Using the verbal and visual definitions and examples four judges evaluated the work collected for the study. Three of the judges were graduate assistants in art education and one judge was an elementary teacher with an art background. Each judge read the verbal definitions of the values for each criterion and was shown visual examples of each. The judging procedure was practiced by each judge scoring three paintings, three photographs and two drawings.

The work that was judged for the study consisted of thirty-two paintings, ten drawings and sixty photographs. These were the first and second paintings and drawings from the four subjects in Group I, and the first and second paintings and five randomly selected photographs from the twelve subjects in Group II. Each of the four judges were given rating forms for judging the paintings, drawings, and photographs (Appendices C-E). Each art work was assigned scores by each of the four judges. The first score was for perceptual viewpoint, the second was for use of spatial elements and the third was for relationships or treatment of elements. The scores assigned were: 1, typical; 2, somewhat unusual; and 3, new or unusual.

Evaluation of Student Involvement in the Process and Satisfaction with Their Final Product

In order to determine differences in student involvement in the process and satisfaction with their final product, each student in both Group I and Group II was given a questionnaire after the third session (Appendix A) and after the final session (Appendix B). Student involvement in the process was evaluated in terms of how much they felt they had learned and how exciting they thought the project was. Student satisfaction with the final product was evaluated in terms of how satisfied they said they were with their second paintings.

CHAPTER III

FINDINGS

Limitations

Major limitations within this study are presented here, so that the findings may be interpreted realistically. This study was designed as a pilot study because of the limitations due to the size of the population and time limitations. The limitation in population was partly due to the cost involved with photography. Both groups were limited to fifteen children because only fifteen cameras were available for use in the study. The main limitation was one of time. The meeting times for the study had to be arranged at times other than regular class time. Group I met after school and Group II met during both home-room period and after school. Actual sessions for the study began in May 1972, and because this was near the end of the school year, school related activities took precedence.

These limitations make it difficult to determine whether the low attendance in Group I, which met after school, was due to other activities or lack of interest. The difference between the two groups in terms of

attendance presents another limitation in the study. A true comparison of differences between the groups is limited by the fact that only four subjects in Group I attended all of the sessions, while seven in Group II attended all the sessions and five missed only one session.

Judge Reliability

The percentage of judge agreement, in terms of the percentage of agreement among four judges, was determined for each of the criteria for the first and second paintings and drawings of Group I and the first and second paintings and photographs of Group II. The minimum percentage of agreement accepted for judge reliability was 65 percent.

The highest percentage of agreement for criterion A--perceptual viewpoint was 96 percent on the first paintings of Group II. The lowest percentage of agreement for criterion A was 77 percent on the photographs of Group II. For criterion B--use of spatial elements, the highest percentage of judge agreement was 82 percent on the drawings of Group I and the lowest percentage of judge agreement was 63 percent on the second paintings of Group I. For criterion C--relationships or treatment of elements, the highest percentage of judge agreement was 88 percent for the second paintings of Group I and the lowest percentage of judge agreement was 74 percent for the photographs of Group II.

The mean percentage of judge agreement on the first paintings for Group I was 84 percent and on the first paintings for Group II was 82 percent. For the second paintings of Group I the mean percentage of judge agreement was 81 percent and for the second paintings of Group II the mean percentage of judge agreement was 86 percent. The mean percentage of judge agreement on the drawings of Group I was 82 percent and the mean percentage of judge agreement for Group II was 73 percent. The percentages of agreement among the four judges on each criterion and the mean percentage of agreement for each group's work are shown in Table 1.

Comparison of Improvement in Expressive Content

Each subject was judged on expressive content in both his first and final painting. Each painting was given three separate scores--one for perceptual viewpoint, one for use of spatial elements, and one for relationships or treatment of elements. Mean percentages for all criteria were determined for each subject's paintings. The mean percentages for each criterion of each group's work were also compiled. The distribution of values assigned each criterion for Group I and Group II are used here as another means of analysis.

TABLE 1

PERCENTAGE OF AGREEMENT AMONG FOUR JUDGES ON EACH CRITERION AND THE MEAN PERCENTAGES OF JUDGE AGREEMENT

Product	A	B	C	Mean %
1st Painting--Group I	.94	.75	.82	.84
Drawings--Group I	.88	.82	.75	.82
2nd Paintings--Group I	.93	.63	.88	.81
1st Paintings--Group II	.96	.75	.75	.82
Photographs--Group II	.77	.68	.74	.73
2nd Paintings--Group II	.94	.81	.83	.86

A = perceptual viewpoint

B = use of spatial elements

C = relationships or treatment of elements

Comparison of Mean Percentages for all Criteria

The mean percentages for all criteria show that three out of the four subjects in Group I increased in expressive content on their second painting. The other subject in Group I showed a decrease in expressive content from his first to his second painting. In Group II only three out of the twelve increased in expressive content on their second paintings. The other nine subjects decreased in expressive content on their second paintings except one subject whose first and second paintings were the same in expressive content. The mean percentage for all criteria on the first and second paintings for each individual are shown for Group I in Figure 10 and for Group II in Figure 11.

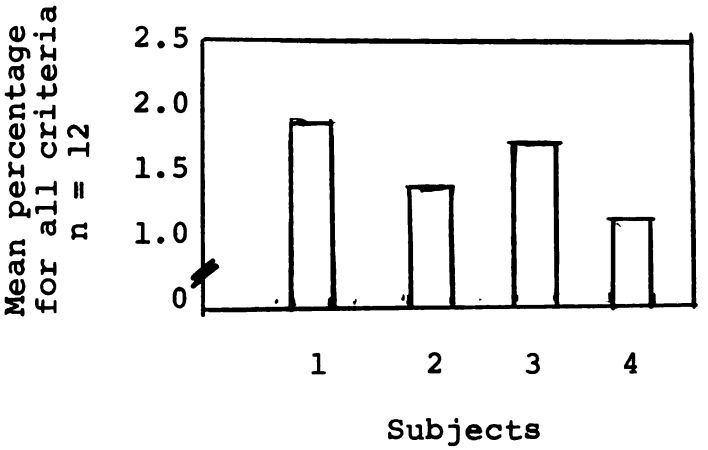
Comparison of Mean Percentages on Each Criteria

The highest mean percentage for perceptual viewpoint was 1.8 on both the second paintings of Group I and on the photographs of Group II. The highest mean percentage for use of spatial elements was 2.0 on the photographs of Group II. The highest mean percentage for relationships or treatment of elements was 2.2 on both the drawings and second paintings of Group I. In Groups I the highest mean percentages for each criterion are on the second paintings in Group II, however, the highest mean percentages for each criterion are on the intermediate work--the photographs.

FIGURE 10

MEAN PERCENTAGES FOR ALL CRITERIA
FOR FIRST AND SECOND PAINTINGS
OF GROUP I

FIRST PAINTINGS



SECOND PAINTINGS

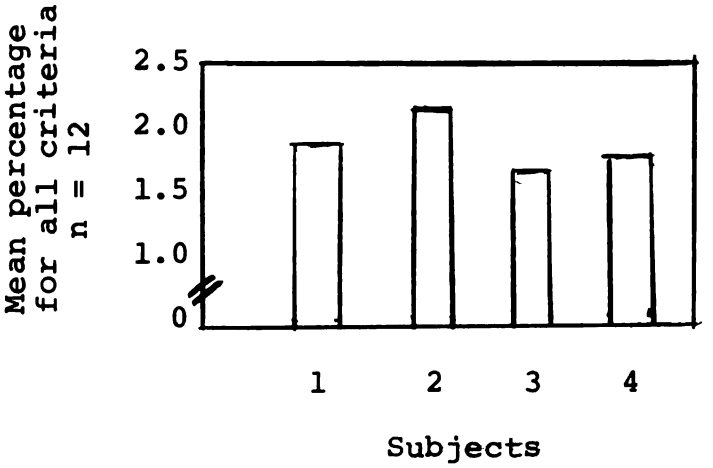
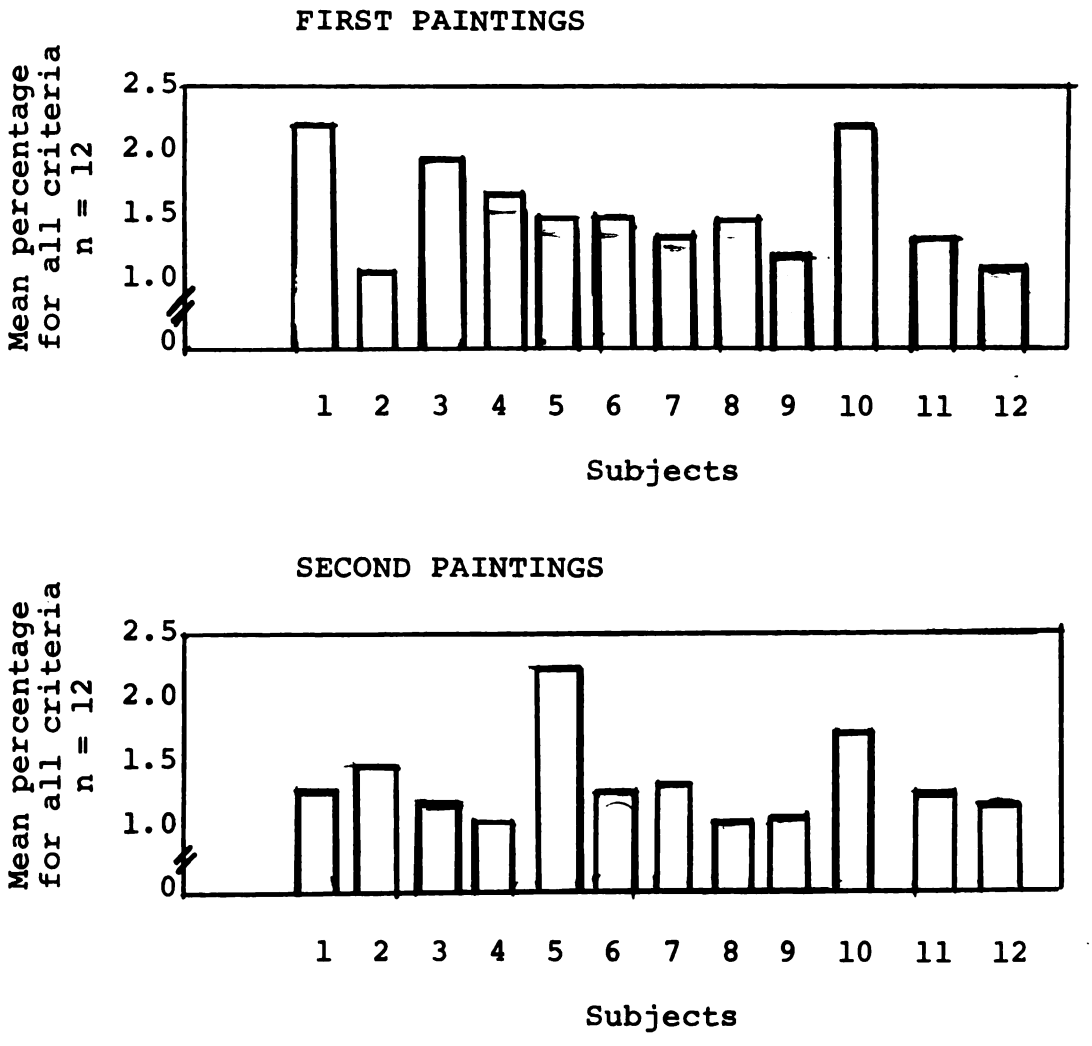


FIGURE 11

MEAN PERCENTAGES FOR ALL CRITERIA
FOR FIRST AND SECOND PAINTINGS
OF GROUP II



Mean percentages on each criterion for Group I are shown in Table 2 and mean percentages on each criterion for Group II are shown in Table 3. In comparing the first and second painting of each group, Group I shows an increase in perceptual viewpoint, use of spatial elements, and relationships or treatment of elements, while Group II shows no increase in any of the criteria. There is a decrease in use of spatial elements and relationships or treatment of elements.

Comparison of the Frequency of Values Assigned for Each Criterion

For the first paintings of Group I the value 1, typical use was assigned most often for each criterion (A--perceptual viewpoint, 13; B--use of spatial elements 11; C--relationships or treatment of elements, 7). The value 2, somewhat unusual use was assigned most often for each criterion for the second paintings of Group I (A--perceptual viewpoint, 11; B--use of spatial elements, 13; C--relationships or treatment of elements, 8).

For the first paintings of Group II the value 1, typical use was assigned most often for criterion A--perceptual viewpoint (48) and criterion B--use of spatial elements (26). The value 2, somewhat unusual use was assigned most often for criterion C--relationships or treatments (20). The value 1, typical use was assigned most often for each criterion for the second paintings of

TABLE 2

MEAN PERCENTAGE ON EACH CRITERION FOR GROUP I

Products		A	B	C
1st paintings	n = 16	1.2	1.4	1.9
drawings	n = 40	1.4	1.6	2.2
2nd drawings	n = 16	1.8	1.8	2.2

A = perceptual viewpoint
B = use of spatial elements
C = relationships or treatment of elements

TABLE 3

MEAN PERCENTAGE ON EACH CRITERION FOR GROUP II

Products		A	B	C
1st paintings	n = 48	1.1	1.6	1.9
photographs	n = 240	1.8	2.0	1.8
2nd paintings	n = 48	1.1	1.4	1.6

A = perceptual viewpoint
B = use of spatial elements
C = relationships or treatment of elements

Group II (A--perceptual viewpoint, 11; B--use of spatial elements, 13; C--relationships or treatment of elements, 8).

The drawings of Group I were most often assigned the value 1, typical use for A--perceptual viewpoint (26); the value 2, somewhat unusual use for B--use of spatial elements (19); and the value 3, new or unusual use for C--relationships or treatment (17).

The photographs of Group II were most often assigned the value 2, somewhat unusual use for each criterion (A--perceptual viewpoint, 96; B--use of spatial elements, 94; C--relationships or treatment of elements, 93). Table 4 lists the frequency of values assigned each criterion for Group I and Table 5 lists the frequency of values assigned each criterion for Group II.

Comparison of Group I and Group II on Involvement in the Process and Satisfaction with Their Final Product

Student involvement in the process of looking with a camera and the process of looking by drawing was evaluated by means of a student questionnaire. Involvement was defined in terms of how much they learned and how exciting they found the project. Analysis of student answers on specific questions were used for comparison. Student satisfaction with the final product was also analyzed on the basis of student answers.

TABLE 4

FREQUENCY OF VALUES ASSIGNED EACH CRITERION FOR GROUP I

Products	A			B			C		
	1	2	3	1	2	3	1	2	3
1st Paintings	13	3	0	11	5	0	7	5	4
Drawings	26	13	1	18	19	3	8	15	17
2nd Paintings	5	11	0	3	13	0	3	8	5

A = perceptual viewpoint
B = use of spatial elements
C = relationships or treatment of elements

1 = typical use
2 = somewhat unusual use
3 = new or unusual use

TABLE 5

FREQUENCY OF VALUES ASSIGNED EACH CRITERION FOR GROUP II

Products	A			B			C		
	1	2	3	1	2	3	1	2	3
1st Paintings	48	0	0	26	16	6	16	20	12
Photographs	88	96	40	77	94	53	89	93	42
2nd Paintings	47	1	0	32	14	2	26	18	4

A = perceptual viewpoint
B = use of spatial elements
C = relationships of treatment of elements

1 = typical use
2 = somewhat unusual use
3 = new or unusual use

Examples of the questionnaire forms are shown in Appendices A and B. Comparisons between the groups can be made by using Tables 6 and 7 which show the percentage for each item on the Student In Progress Evaluation Form, and Tables 8 and 9 which show the percentage for each item on the Final Evaluation Form.

Comparison of Involvement in the Process

On the first Student Evaluation Form 33 percent of the students in Group I felt that they had learned a lot compared to 38 percent in Group II. In Group I, 27 percent thought they had learned some and 50 percent marked between some and a little. In Group II, 8 percent marked between a lot and some, 23 percent felt they had learned some, 15 percent marked between some and a little and 15 percent marked a little. The percentages of answers for the same item on the Final Student Evaluation Form were somewhat different. In Group I, 75 percent felt they had learned a lot and 25 percent marked a little. In Group II, 54 percent felt they had learned a lot, 23 percent marked between a lot and some and 23 percent marked some.

Group II found the project more exciting than Group I on the first evaluation form, this changed however on the final evaluation form. On the first form 34 percent of Group I thought the project was either exciting or between exciting and o.k., while 92 percent of Group II

TABLE 6

PERCENTAGE OF STUDENT ANSWERS ON
STUDENT IN PROGRESS EVALUATION FORM
FOR GROUP I
n = 6

Item	A	B	C	D	E
1. So far I think I have learned . . .	.33	.00	.27	.50	.00
2. So far I have found the work . . .	.33	.00	.50	.27	.00
3. So far I think this project is . . .	.17	.17	.50	.17	.00
4. I feel that what I have done so far is . . .	.33	.67	.67	.33	.00

A = a lot, difficult, exciting, good

B = a value between A and C

C = some, average, o.k.

D = a value between C and E

E = a little, easy, boring, poor

TABLE 7

PERCENTAGE OF STUDENT ANSWERS ON
STUDENT IN PROGRESS EVALUATION FORM
FOR GROUP II
n = 13

	Item	A	B	C	D	E
1.	So far I think I have learned . . .	.38	.08	.23	.15	.15
2.	So far I have found the work . . .	.00	.00	.23	.38	.38
3.	So far I think this project is . . .	.54	.38	.08	.00	.00
4.	I feel that what I have done so far is . . .	.54	.23	.15	.00	.08

A = a lot, difficult, exciting, good

B = a value between A and C

C = some, average, o.k.

D = a value between C and E

E = a little, easy, boring, poor

TABLE 8

PERCENTAGE OF STUDENT ANSWERS ON
FINAL STUDENT EVALUATION FORM
FOR GROUP I
n = 4

	Item	A	B	C	D	E
1.	In the last few weeks I have learned . . .	.75	.00	.00	.00	.25
2.	What I have learned has helped me on this final painting . . .	.50	.25	.00	.00	.25
3.	I found this class . . .	.75	.00	.00	.25	.00
4.	The work in this class was . . .	.00	.25	.50	.00	.25
5.	I feel that the work I did in this class was . . .	.75	.00	.00	.25	.00
6.	As for my final painting . . .	.75	.00	.25	.00	.00

A = a lot, exciting, good, very satisfied

B = a value between A and C

C = some, o.k., average, satisfied

D = a value between C and D

E = a little, boring, easy, poor, not satisfied

TABLE 9

PERCENTAGE OF STUDENT ANSWERS ON
FINAL STUDENT EVALUATION FORM
FOR GROUP II
n = 13

	Item	A	B	C	D	E
1.	In the last few weeks I have learned . . .	.54	.23	.23	.00	.00
2.	What I have learned has helped me on this final painting . . .	.23	.23	.15	.23	.15
3.	I found this class . . .	.38	.23	.38	.00	.00
4.	The work in this class was . . .	.00	.00	.31	.38	.31
5.	I feel that the work I did in this class was . . .	.31	.15	.38	.15	.00
6.	As for my final painting . . .	.23	.31	.23	.08	.15

A = a lot, exciting, good, very satisfied

B = a value between A and C

C = some, o.k., average, satisfied

D = a value between C and D

E = a little, boring, easy, poor, not satisfied

answered this way. On the final evaluation form Group I had 75 percent that marked exciting and Group II had 38 percent that thought the project was exciting.

Comparison of Satisfaction with Their Final Product

Group I was more satisfied with their second paintings than Group II. In Group I, 75 percent were very satisfied and 25 percent were satisfied with their paintings. In Group II, 23 percent were very satisfied 31 percent marked between very satisfied and satisfied and 23 percent said they were satisfied with their paintings.

Summary of the Findings

Comparison of the mean percentages for all the criteria show that three-fourths of Group I improved on expressive content in their second painting, while only one-fourth of Group II showed any improvement. The mean percentages for each criteria show that on their second paintings Group I improved in terms of all three criteria--perceptual viewpoint, use of spatial elements and relationships or treatment of elements. Group II showed no improvement in any of the three criteria, their mean percentages for each criterion on the second paintings were less than the mean percentages for each criterion on the first paintings. Group II had the highest mean percentages for each criterion on the photographs. The frequency of

values assigned for each criterion show Groups I and II to be the same for perceptual viewpoint and for relationships or treatment of elements. Criterion B--use of spatial elements was most frequently assigned a value of 2, somewhat unusual use in Group I and most frequently assigned a value of 1, typical use in Group II.

The findings on student involvement show that both groups changed their evaluations of how much they thought they had learned. On the first evaluation 33 percent of Group I felt they had learned a lot, but on the second evaluation 75 percent felt they had learned a lot. This compares to a 38 percent and 54 percent respectively for Group II. On the first evaluation form Group II felt that the project was more exciting than Group I. This was reversed however, on the second evaluation form. In terms of satisfaction with the final product Group I was more satisfied with their second paintings than Group II.

CHAPTER IV

SUMMARY AND CONCLUSIONS

Summary of the Problem and Procedures

The pilot study attempted to answer the following questions concerning the use of media in art education:

1. Does the use of a camera provide greater perceptual awareness, in terms of expressive content in painting, than drawing does?

2. Will children who use a camera be more involved in the process of gaining new visual information than those who draw?

3. Will children who use a camera to collect visual information for expressive content in painting be more satisfied with their paintings than children who collect their visual information through drawing?

Certain assumptions from the literature provided a basis for the study. The main premise of the study was

that the paintings of trees by fifth graders who have photographed trees in different ways will be qualitatively better, in terms of expressive content, than the paintings of trees by fifth graders who have done drawings of trees. The second premise was that children who have used cameras to photograph trees will be more involved in the process and more satisfied with their final painting of trees than the children who have done drawings of trees.

A pilot study was developed to provide a comparison between children who used cameras and children who did drawing. Two groups of fifth grade children participated in the study. Both groups did two tempera paintings of trees one at the beginning of the study and one at the end. One group used a camera to photograph different perceptual viewpoints, new utilization of spatial elements and new relationships or treatments, dealing with trees as subject matter. The other group also explored different perceptual viewpoints, utilization of spatial elements and relationships or treatments, but did so by drawing.

The art work of both groups was judged on the three criteria for expressive content--perceptual viewpoint, use of spatial elements and relationships or treatment of elements. Mean percentages for the first and second painting of each group were obtained in order to compare the groups on their improvement in expressive content. The

mean percentages for each criterion were also compiled. Student involvement in each process and the students' satisfaction with their final painting was evaluated by means of two questionnaires. A comparison of the two groups on involvement in the process and satisfaction with the product was analyzed on the basis of student answers on the two questionnaires.

Conclusions of the Study

The findings of the study show that fifth graders who did drawings of trees, painted pictures that were qualitatively better, in terms of expressive content, than fifth graders who photographed trees. In this study drawing was a better means of perceptual training for expressive content in painting than photography.

The mean percentages for each criterion show that photography does have a potential for perceptual training in terms of perceptual viewpoint, use of spatial elements and relationships or treatment of subject matter. That the camera itself is a motivating factor in perceptual learning may be indicated by the difference in attendance between the photography group and the drawing group.

Although the photography group was more involved in the process at the beginning, this involvement did not last. The findings suggest that the students who were using cameras were more involved with discovering new

perceptual viewpoints, new use of spatial elements and new relationships or treatments of subject matter. This awareness did not carry over into their second paintings. Using the camera was fun at first but most of the students needed more direct application of the photography to painting. Perceptual awareness is not gained by simply using a camera. If the full potential of the camera is to be used for perceptual training examination and discussion of the actual photographs is as important as discussion during the photography process.

Students in the drawing group were more satisfied with their final paintings of trees, than the students in the photography group. The students using cameras did not see the relationships between what they were doing with the cameras and the final paintings. The final painting was not as meaningful to them as it was to children in the drawing group. The drawing in this case provided a more direct means of developing expressive content for painting. Perhaps a combination of drawing and photography would be an even better means for fifth graders in developing perceptual awareness for expressive content.

Suggestions for Further Study

A long term study based on this pilot study would be more valid in determining the effects that photography has on the expressive content of childrens' paintings.

In a future study a larger population and more sessions over a longer time span could provide more meaningful data. Additional subject matter such as people or animals might create more interest on the part of the subjects.

Other questions related to this study may suggest other areas for further study:

Can photography be used to improve other qualities of perceptual awareness, for example aesthetic unity and representational qualities?

What teaching methods would best encourage perceptual training for expressive content in painting?

Would a combination of drawing and photography be more effective in collecting visual information for expressive content than the use of only one or the other?

This study has attempted to provide some answers to questions concerning the use of media in art education. In this study drawing was a more effective means of perceptual training for improving expressive content in painting. Photography has a potential for perceptual training, but more research is needed to determine how it can best be used in relation to other art experiences.

FOOTNOTES

FOOTNOTES

[1]Vincent Lanier, "Newer Media and the Teaching of Art," Concepts in Art and Education, ed. George Pappas (Londong: Collier-Macmillan Limited, 1970), p. 300.

[2]June King McFee, "Society, Art, and Education," Concepts in Art and Education, ed. George Pappas (London: Collier-Macmillan Limited, 1970), p. 88.

[3]Patricia Hefferman-Cabrera, The Camera as "Eye of the Mind." A Project for Visual Literacy and the Teaching of English as a Second Language to Disadvantaged Spanish Speaking Migrant Children, ERIC no. ED 041 254 (Washington: U.S. Department of Health, Education and Welfare, 1970), p. 1.

[4]Murray Suid, Painting with the Sun, Teacher's Manual (Boston: CSCS, Inc., 1970), p. 2.

[5]Kenneth H. Silber, An Experimental Study of Affective Response Elicited by Several Mediated and Non-Mediated Instructional Methods, ERIC no. ED 032 779 (Washington: U.S. Department of Health Education and Welfare, 1969), p. 1.

[6]Vincent Lanier, The Newer Uses of Media in Art Education Project, ERIC no. ED 010 275 (Washington: National Art Education Association, 1966), p. 65.

[7]Ibid., p. 71.

[8]Ibid., p. 63.

[9]June King McFee, Preparation for Art (Belmont, California: Wadsworth Publishing Co., Inc., 1961), pp. 44-45.

[10]R. A. Salome, "The Effects of Perceptual Training Upon the Two Dimensional Drawings of Children," Studies in Art Education, Vol. VII, No. 1 (Autumn, 1965), p. 32.

[11]Rudolf Arnheim, Film as Art (Berkeley, California: University of California Press, 1967), p. 14.

[12]Gyorgy Kepes, Language of Vision (Chicago: Paul Theobald and Co., 1944), p. 91.

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[14]Aaron Scharf, Creative Photography (New York: Van Nostrand Reinhold Company, 1965), p. 41.

[15]Ennie M. Pridgen et al., Progress for Middle Graders Among the Educationally Disadvantaged Through Photography, A paper presented at the International Reading Association Conference, Anaheim, California, May 6 to May 9, 1970, ERIC no. ED 044 250, p. 6.

[16]Viktor Lowenfeld and W. Lambert Brittain, Creative and Mental Growth (5th ed.; New York: The Macmillan Company, 1970), p. 193.

[17]Robert C. Burkhart, Spontaneous and Deliberate Ways of Learning (Scranton, Pennsylvania: International Textbook Company, 1962), pp. 32-42.

[18]Hilda P. Lewis and Paul H. Mussen, "The Development of an Instrument for Evaluating Children's Artistic Creativity," Studies in Art Education, Vol. X, No. 3 (Spring, 1969), pp. 25-47.

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APPENDICES

APPENDIX A

EXAMPLE OF STUDENT IN PROGRESS EVALUATION FORM

1. So far I think I have learned:

a._____	b._____	c._____	d._____	e._____
a lot		some		a little

2. So far I have found the work:

a._____	b._____	c._____	d._____	e._____
difficult		average		easy

3. So far I think this project is:

a._____	b._____	c._____	d._____	e._____
exciting		o.k.		boring

4. I feel that what I have done so far is:

a._____	b._____	c._____	d._____	e._____
Good--I've done my best		Average for me		Poor--I could do better

5. Write here any comments you have about what you've done so far:

_____

_____

_____

_____

_____

APPENDIX B

EXAMPLE OF FINAL STUDENT EVALUATION FORM

1. In the last few weeks I have learned:

a._____	b._____	c._____	d._____	e._____
a lot		some		a little

2. What I have learned has helped me on this final painting:

a._____	b._____	c._____	d._____	e._____
a lot		some		a little

3. I found this class:

a._____	b._____	c._____	d._____	e._____
exciting		o.k.		boring

4. The work in this class was:

a._____	b._____	c._____	d._____	e._____
difficult		average		easy

5. I feel that the work I did in this class was:

a._____	b._____	c._____	d._____	e._____
Good--I've done my best		Average for me		Poor--I could have done better

6. As for my final painting:

a._____	b._____	c._____	d._____	e._____
I am very satisfied with it-- I did the best I could		I am satisfied with it		I am not satisfied with it-- I could have done better

APPENDIX B-continued

What kinds of things did you learn? Do you look at things differently now? If so, how? Did you get new ideas for your art work? What did you like about this project? What didn't you like about it?

APPENDIX C

EXAMPLE OF JUDGES RATING FORM FOR PAINTINGS

1.	A._____	9.	A._____	17.	A._____	25.	A._____
	B._____		B._____		B._____		B._____
	C._____		C._____		C._____		C._____
2.	A._____	10.	A._____	18.	A._____	26.	A._____
	B._____		B._____		B._____		B._____
	C._____		C._____		C._____		C._____
3.	A._____	11.	A._____	19.	A._____	27.	A._____
	B._____		B._____		B._____		B._____
	C._____		C._____		C._____		C._____
4.	A._____	12.	A._____	20.	A._____	28.	A._____
	B._____		B._____		B._____		B._____
	C._____		C._____		C._____		C._____
5.	A._____	13.	A._____	21.	A._____	29.	A._____
	B._____		B._____		B._____		B._____
	C._____		C._____		C._____		C._____
6.	A._____	14.	A._____	22.	A._____	30.	A._____
	B._____		B._____		B._____		B._____
	C._____		C._____		C._____		C._____
7.	A._____	15.	A._____	23.	A._____	31.	A._____
	B._____		B._____		B._____		B._____
	C._____		C._____		C._____		C._____
8.	A._____	16.	A._____	24.	A._____	32.	A._____
	B._____		B._____		B._____		B._____
	C._____		C._____		C._____		C._____

APPENDIX D

EXAMPLE OF JUDGES RATING FORM FOR DRAWINGS

1.	A._____		6.	A._____	
	B._____			B._____	
	C._____			C._____	
2.	A._____		7.	A._____	
	B._____			B._____	
	C._____			C._____	
3.	A._____		8.	A._____	
	B._____			B._____	
	C._____			C._____	
4.	A._____		9.	A._____	
	B._____			B._____	
	C._____			C._____	
5.	A._____		10.	A._____	
	B._____			B._____	
	C._____			C._____	

APPENDIX E

EXAMPLE OF JUDGES RATING FORM FOR PHOTOGRAPHS

1. A.___	7. A.___	13. A.___	19. A.___	25. A.___
B.___	B.___	B.___	B.___	B.___
C.___	C.___	C.___	C.___	C.___
2. A.___	8. A.___	14. A.___	20. A.___	26. A.___
B.___	B.___	B.___	B.___	B.___
C.___	C.___	C.___	C.___	C.___
3. A.___	9. A.___	15. A.___	21. A.___	27. A.___
B.___	B.___	B.___	B.___	B.___
C.___	C.___	C.___	C.___	C.___
4. A.___	10. A.___	16. A.___	22. A.___	28. A.___
B.___	B.___	B.___	B.___	B.___
C.___	C.___	C.___	C.___	C.___
5. A.___	11. A.___	17. A.___	23. A.___	29. A.___
B.___	B.___	B.___	B.___	B.___
C.___	C.___	C.___	C.___	C.___
6. A.___	12. A.___	18. A.___	24. A.___	30. A.___
B.___	B.___	B.___	B.___	B.___
C.___	C.___	C.___	C.___	C.___

APPENDIX E-continued

31. A.___	37. A.___	43. A.___	49. A.___	55. A.___
B.___	B.___	B.___	B.___	B.___
C.___	C.___	C.___	C.___	C.___
32. A.___	38. A.___	44. A.___	50. A.___	56. A.___
B.___	B.___	B.___	B.___	B.___
C.___	C.___	C.___	C.___	C.___
33. A.___	39. A.___	45. A.___	51. A.___	57. A.___
B.___	B.___	B.___	B.___	B.___
C.___	C.___	C.___	C.___	C.___
34. A.___	40. A.___	46. A.___	52. A.___	58. A.___
B.___	B.___	B.___	B.___	B.___
C.___	C.___	C.___	C.___	C.___
35. A.___	41. A.___	47. A.___	53. A.___	59. A.___
B.___	B.___	B.___	B.___	B.___
C.___	C.___	C.___	C.___	C.___
36. A.___	42. A.___	48. A.___	54. A.___	60. A.___
B.___	B.___	B.___	B.___	B.___
C.___	C.___	C.___	C.___	C.___

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